

LASER APPARATUS WITH ACTIVE THERMAL TUNING OF EXTERNAL CAVITY

ABSTRACT OF THE DISCLOSURE

A laser apparatus and method that uses active thermalization of a reflective element to minimize losses and provide wavelength stability. The laser comprises first and second reflectors defining an external cavity, and a compensating member coupled to at least one of the reflectors and configured to thermally position one reflector with respect to the other reflector. The compensating member may be coupled directly to the first reflector and configured to position first reflector with respect to said second reflector. The thermal positioning may be carried out by a thermoelectric controller operatively coupled to the compensating member and configured to thermally adjust the compensating member by heating or cooling thereof. The laser apparatus may comprise a gain medium having first and second output facets and emitting a coherent beam from the first output facet along an optical path. The first reflector is positioned in the optical path, with the second output facet and first reflector defining an external cavity. The compensating member may be thermally conductive and have a high coefficient of thermal expansion.